

15 Aug. Fourth molt.

The venter was black, and the props were black with white tips. On first and second segments, the arrow-heads were replaced by vertical black dashes, extending nearly to the dorsal line.

The yellow one came out with the body black, the hair Maltese-gray, lighter over the head; pencils darker gray with black tips. The gray one was like it.

26 Aug. Adult larva, 51 mm. long, densely covered with long silky hair—varying in color from pure white to deep gray. Pencils almost black with black tips. Head gray.

Body hardly to be seen but black wherever visible. Props black with red tips. Feet black.

27 Aug. Three shed all their pencils and long hair, emptied themselves, and

crawled rapidly about as if hunting for good places to pupate. Rotten wood and bark were provided, but no attention was paid to them, and no signs of spinning were found.

30 Aug. The pupae appeared, bright apple green, with three abdominal rows of gray dots, at first, but they soon became of a uniform mahogany color, very shining and bright, about 19 mm. long.

Some were in close tins, and some in a paste-board box, but those in tin pupated first.

The larvae fed on sassafras grew faster and larger than those fed on ash, and molted and pupated earlier.

As the larvae grew older they chose older leaves, in preference to young and tender ones, as food.

This I have noticed with all my larvae this year.

## ELECTRIC LIGHT CAPTURES.

BY JOHN HAMILTON, ALLEGHENY, PA.

The reputed rarity of an insect is frequently owing to its ability to conceal itself and a want of knowledge in the collector regarding its habits, whereas it may be really abundant. This is exemplified in the instances of *Calosoma scrutator* and *C. willcoxi*. During near twenty years of collecting here I only took a single living specimen of each; Mr. Klages who has collected near half that time—and carefully, was not more successful, nor were several amateurs whose collections were seen.

Yet all this time there were thousands of these insects about us as we now know. This year (1888) the evenings of 9, 10 and 11 May were warm, temperature 60° to 65° F. During one hour of each of these evenings I picked up from the platform of an open pavilion in one of our parks in the centre of the city, to the corners of which powerful electric lights were suspended, ninety ♀ and thirty ♂ *Calosoma scrutator*; one hundred and ten ♀ and twenty-six ♂ *C. willcoxi*. Three weeks of low tem-

perature and great humidity succeeded during which time no beetles were observed, but on 2 June it became warm again and so continued, and these same beetles again occurred, but much less abundantly, and continued till 23 June, after which no more were observed. Mr. Klages collected during a few evenings at the electric lights suspended opposite the large plate-glass windows of some of the stores in Pittsburgh with such success, that he sent to Europe seven hundred specimens of *C. willcoxi* and three hundred of *C. scrutator* (his correspondents there write for more!).

Where these beetles came from is a matter of speculation, but it is scarcely supposable that all were raised in the city. The number of individuals must have been immense as the collecting done by Mr. Klages and myself was only at a few places, and for a very brief period, and that in face of the small boy, etc., etc., difficulty. Of *Calosoma calidum*, which has always been

moderately abundant, not over a dozen specimens were taken at light the whole season. *C. externum* yielded five specimens, *Diplochila major* four specimens, *Polymoechus brevipes* six specimens, *Erycus puncticollis* four specimens, none of which had been taken elsewhere.

To show the great distances to which water beetles fly, I may state that at the same place on the evenings of May mentioned I picked up twenty-three ♀ and four ♂ *Cybister fimbriolatus*, one ♂ *Dytiscus fasciventris*, twenty-four ♀ and seven ♂ *Hydrophilus triangularis*. The great hemipteron, *Belostoma americanum* could have been taken by the peck. The nearest point to the river is more than three-fourths of a mile.

The number of coleoptera and insects of all orders that are attracted to the electric lights in these cities is beyond computation.

#### EFFECT OF CONSANGUINITY IN LEPIDOPTERA.

The late M. Pierre Millière contributed an article, entitled, "Des résultats variés que donnent chez les lépidoptères les accouplements consanguins," to *Il naturalista siciliano* for May 1887, which contains facts interesting to the biologist. He writes:

"When, among lepidoptera bred in captivity, pairings continue from one generation to another, without interrupting the series of consanguineous unions by the introduc-

tion of new blood, there occurs for each species a particular result, in such manner that the consanguineous and successive unions not only do not produce, for the lepidoptera in general, identical results, but, on the contrary, each species conforms to an influence which is peculiar to itself."

As illustrating this variety of effect of consanguineous unions in lepidoptera the author obtained fertile eggs for two successive years from *Hadena solieri*; the third year only about half the eggs hatched, while the fourth